

NOTES ON BRITISH AGARICS: II

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ABSTRACT. A new species of *Coprinus*, *C. luteocephalus*, is described, the name *Coprinus utrifer* Josseland validated and *C. laanii* Kits van Waveren recorded for the British Isles.

A NEW SPECIES OF COPRINUS

The first English description of *Coprinus vermiculifer* Joss. ex Dennis, based on a British collection, was given in Watling 1967. Since that date this species has been found in several places in Scotland and northern England. The veil of *C. vermiculifer* is composed of hyaline, thick-walled, narrow hyphae $5-7.5\mu\text{m}$ broad which give to the surface of the pileus a filamentous-floccose aspect. A collection of a coprophilous species of *Coprinus* made by R. F. O. Kemp, whilst screening members of the genus for mating patterns, closely resembled *C. vermiculifer* in several microscopic structures but differed markedly in the lemon-yellow to distinctly sulphur yellow colouring.

Only two collections have been made to date but it has been grown in pure-culture for several generations and has been induced to fruit liberally using the paper-pulp technique outlined by Watling (1961), and on dung (horse), extract agar and sterile dung by Kemp and myself. The bright greenish yellow cap and veil characters remained constant under all cultural conditions and differed from *C. vermiculifer* sufficiently to propose the following new species.

Coprinus luteocephalus Watling, sp. nov. Fig. 1A-E.

Pileus primo glandiformis vel elongato-ellipticus, 8-18 mm altus, 6-16 mm latus, dein expansus, plano-convexus vel umbonatus 8-22 mm, sulphureus vel citrinus interdum ad discum obscurius coloratus vel luteus primo totus sulphureus fibrillosus vulgo ad discum squamis velutinus interdum sordide isabellino-tinctus obtectus interdum postremo radialiter plicato-striatus margine fisso revolutoque. *Lamellae* fere liberae, ex albo dein nigrae, confertae, ad aciem primo albo-flocculosae. *Stipes* primo 10-20 \times 2-2.5 mm, postremo—60 \times 1-1.5 mm (2-3 mm ad basim), subaequalis vel sursum attenuatus, albus vel pallido-griseus, totus fibrillosus cavus ad basim obscuris luteo fibrilloso. *Caro* tenuis grisea. *Sporae* ellipsoideae, 10.5-12.5 \times 6-7.5 μm . *Basidia* 4-sporigera. *Cystidia* aciei lamellarum pyriformia vel irregulariter vesiculosa 40-45.5 \times 35-38 μm ; cystidia faciei lamellarum obovata vel irregulariter vesiculosa. *Cellulae* veli pilei cylindricae vel fusiformes.

Typus: Watling 7360 (holo. E).

Pileus elongate slightly constricted about half-way, 8-18 mm high, rapidly expanding to plano-convex 8-22 mm, sulphur to citrine yellow darker and more yellow towards the disc, distinctly umbonate, becoming more yellow with maturity then isabelline towards the margin, fibrillose scurfy throughout

or more velvety at the disc, striate then sulcate at margin. *Stipe* up to $60 \times 1-1.5$ mm ($2-3$ mm at base) developing rapidly, hollow, hyaline or slightly brownish, equal except for slightly bulbous foot which is coated with sulphur to olivaceous hyphae. *Gills* grey-whitish then dark violaceous black, crowded, whitish floccose at margin when young. Flesh thin, greyish.

Spore-mass violaceous black. *Basidiospores* dark brown, $10.5-12.5 \times 5-7.5 \mu\text{m}$, ellipsoid in face-view, slightly flattened in side-view, thick-walled, apiculus small but obvious, germ-pore distinct c. $2 \mu\text{m}$ broad, central. *Basidia* 4-spored, $20-25 \times 10-12 \mu\text{m}$, hyaline in water and ammoniacal solutions. *Cheilocystidia* vesiculose, few differentiated into a blunt apex, thin-walled, smooth, hyaline in water and ammoniacal solutions, numerous, $40-45 \times 35-38 \mu\text{m}$. *Pleurocystidia* sparse, swollen with long blunt neck, obovate, hyaline in water and ammoniacal solutions $85-100 \times 40-45 \mu\text{m}$, smooth, thick-walled. *Brachycystidia* $13-18 \mu\text{m}$ in diameter when fully turgid, ellipsoid, hyaline in water and ammoniacal solutions. *Pileal surface* of swollen ellipsoid to subglobose cells, $17.5-31.5 \mu\text{m}$ in diameter, covered in velar remnants. *Pileus trama* of swollen, elongate cylindric cells with slightly brownish walls. *Hymenophoral trama* of hyaline, swollen, regularly arranged cells. *Veil* a mixture of thin-walled, septate filamentous hyphae, $2-3.5 \mu\text{m}$ broad, with granular or amorphous yellow vacuolar sap, and swollen, elongate-ellipsoid or fusiform cells $10-12 \mu\text{m}$ broad; hyphal elements retain colour in ammoniacal solutions, irregularly branched and often ornamented with slightly yellowish prismatic deposits. *Stipe-cortex* of parallel, septate, hyaline, cylindric cells, $7.5-10.5 \mu\text{m}$ broad; *clamp-connections* frequent.

Scotland. Midlothian: Penicuik, Glencorse, on horse dung, 10 x 1968, legit R. F. O. Kemp, Watling 7360 (Type). Further collection on horse dung from England, Cumberland, Wigton; legit R. F. O. Kemp.

In external appearance, *C. luteocephalus* resembles *C. vermiculifer* but differs macroscopically in the distinct sulphur-yellow fruit-body which retains the yellow coloration even into maturity. Microscopically, it differs primarily in the lack of thick-walled, diverticulate hyphae in the veil, many of which are filled or ornamented with prismatic yellow material.

This species fruits well in pure culture on various media. It produces clamp-connections in culture and the monocaryotic hyphae produce wet oidial colonies. It is tetra-polar (pers. communication R. F. O. Kemp) and incompatible with *C. vermiculifer*.

VALIDATION OF COPRINUS UTRIFER

In the paper mentioned above (Watling, 1967) a full description of *C. utrifer* was given based on material from Malham, Yorkshire. It was there indicated that Jossierand, who first drew attention to the fungus, had failed to validate the name by omitting a latin diagnosis. The material which was described was inadequate for the purpose of preservation and validation was again deferred until better material came to hand. *C. utrifer* is not an uncommon fungus but usually appears as solitary specimens or in only small groups; it is a small fungus. A careful search was made on a subsequent visit to Malham and such excellent material was found that I am now able to offer the following formal description.

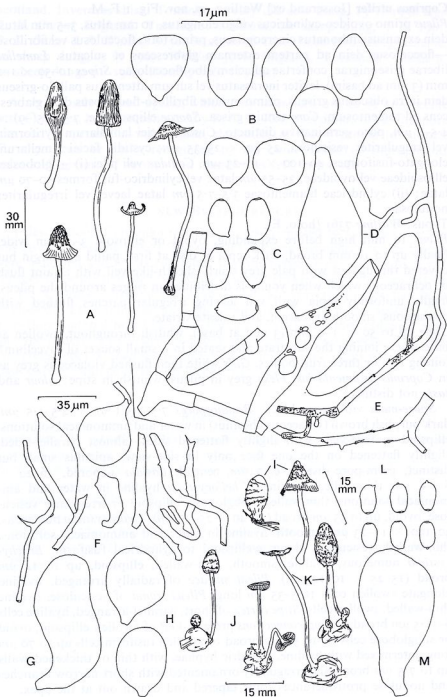


FIG. 1. A-E, *Coprinus luteocephalus*: A, habit sketch; B, cheilocystidia; C, basidiospores; D, pleurocystidia; E, veil constituents. F-M, *C. utrifer*: F, veil constituents; G & M, pleurocystidia; H, cheilocystidia; I, habit sketch of South Uist material, *Watling* 5716; J, habit sketch, Malham, *Watling* 7361 (type); K, habit sketch of 1961 Malham material, *Watling* 6050; L, basidiospores.

Coprinus utrifer [Josserand ex] Watling, sp. nov. Fig. 1 F-M.

Pileus primo ovoideo-cylindricus vulgo elongatus, 10 mm altus, 3-5 mm latus, dein expansus umbonatus cinereogriseus, primo totus flocculosus vel fibrilloso—flocculosus dein ad partem externam glabrescens et sulcatus. *Lamellae* liberae griseonigrae, confertae ad aciem albo-flocculosae. *Stipes* 10-50 × 1-2 mm (3 mm ad basim), leviter incrassatus vel sursum attenuatus pallido-griseus dein infra obscurius griseus, primo minute fibrilloso-flocculosus dein glabrescens ad tomentosum. *Caro* tenuis, grisea. *Sporae* ellipsoideae, 7.5-8.5(-9) × 4.5-5 µm, poro germinativo distincto. *Cystidia* aciei lamellarum pyriformia vel irregulariter vesiculosa, 25-40 × 25-35 µm; cystidia faciei lamellarum elongato-fusiformes, 40-100 × 17-23 µm. *Cellulae* veli pilei (i) ± globosae, ellipsoideae vel ovoideae, 35-55 µm latae vel cylindrico-fusiformes 50-70 µm latae; (ii) cylindricae filamentosae 3.5-7.5 µm latae laeves vel irregulariter nodulosae.

Typus: *Watling* 7361 (holo. E).

Pileus 10 mm high before expanding, ovoid or ellipsoid 3-5 mm wide, finally up to 10 mm broad, dark sepia at disc at first, pallid at margin but covered throughout with pale grey scurfy sheath-like veil with a faint flush of ochraceous which when young is distributed in ridges around the pileus, finally uniformly sepia with veil leaving irregular patches flushed with ochraceous, smooth at margin, and sulcate-striate.

Stipe up to 50 × 1-2 mm (3 mm at base), whitish throughout, swollen at base where joining the substrate and seated in a small socket of mycelium* joining two or three fruit-bodies. *Gills* white then flushed violaceous grey as in *Coprinus atramentarius*. *Flesh* grey in pileus, whitish in stipe; *odour* and *taste* not distinct.

Spore-mass violaceous black. *Basidiospores* 7.5-8.5 (-9) × 4.5-5.5 µm, dark purplish brown (vinaceous chestnut) in water and ammoniacal solutions, ellipsoid in face-view with slightly flattened sides—almost parallel-sided, slightly flattened on the one face only in side-view, apiculus small but distinct, germ-pore distinct c. 2 µm, central. *Basidia* 4-spored, 16-20 × 6.5-8 µm thin-walled, hyaline. *Cheilocystidia* hyaline in water and ammoniacal solutions, thin-walled, subglobose, ellipsoid or irregularly vesiculate, ovoid, up to 35 µm broad (25-40 × 25-35 µm). *Pleurocystidia* numerous, 40-100 × 17-23 µm, smooth, hyaline in water and ammoniacal solutions, thin-walled, vesiculate, elongate-ellipsoid to cylindrical fusiform. *Brachycystidia* numerous, hyaline, smooth, thin-walled, ellipsoid, up to 14 µm broad (15-25 × 10-14 µm). *Pileal surface* of radially arranged, hyaline elongate swollen cells 16.5-35 µm long. *Pileus trama* of vesiculate, hyaline thin-walled, swollen cells. *Stipe cortex* of short, parallel-arranged, hyaline cells 6-11.5 µm broad. *Clamp-connections* present. *Veil* of swollen ellipsoid, ovoid or subglobose cells up to 55 µm broad or swollen fusiform cells up to 70 µm long, intermixed with hyaline, cylindric hyphae, with thin or thickened walls up to 7.5 µm broad and irregularly ornamented with short narrow branches and nodulose protruberances some tapered and drawn out at the apex.

* In this character *C. utrifer* agrees with Sowerby's description (Sowerby, Plate 303) and illustration of *Agaricus acetabulosus* (= *Acetabularia*) a fungus frequently referred to the Bolbitiaceae on the meagre information available. The presence of very large facial cystidia (Sowerby's cells visible with the naked eye) in *Acetabularia* are infrequent in the Bolbitiaceae but common in many members of the Coprinaceae including *C. utrifer*.

Scotland. Inverness-shire: Tomich, on very old cow dung, 15 vi 1958 legit P. D. Orton; England. Yorkshire: Malham, on sheep dung, 7 ix 1961, P. D. Orton & R. Watling 6050. Scotland. S Uist: Loch Druidebeg Reserve, on sheep dung, 5 ix 1967, Watling 5716; England, Yorkshire: Malham, on sheep dung, 9 v 1969, Watling 7361 (Typus).

A very closely related agaric, which may later turn out to be conspecific with *C. utrifer*, has been collected by R. F. O. Kemp. It differs in basidiospore size and shape and morphological characters of the mycelium in culture. *C. utrifer* can be easily recognised by the combination of coprophilous habit and mixture of swollen and filamentous cells in the veil.

A NEW BRITISH RECORD

A description of an unknown taxon, closely related to *Coprinus martinii* was given in Watling (1967). The relevant features distinguishing this fungus were indicated and it was concluded that the material was similar to, if not conspecific with, that mentioned by Kühner (1953). Since 1967 an article on the *Coprinus stercorarius* group (Kits van Waveren, 1968) has been published; in this publication *C. laanii* was described as a new species. The Yorkshire material noted in 1967 (Watling 2600C) has been compared with the type material of *C. laanii* and they are found to be conspecific (Kits van Waveren, 1968). *C. laanii* has since been found on wet, soggy moss and on algal covered stumps in several localities in Midlothian.

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